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# Imaging

## A CT-BASED SCORE TO PREDICT THE SUCCESS OF INTERVENTIONAL REVASCULARIZATION OF CHRONIC TOTAL CORONARY OCCLUSIONS

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**Background:** Interventional revascularization (PCI) of chronic total occlusions (CTO) is technically challenging. Success rates vary substantially and failure is difficult to predict. Coronary computed (CT) angiography has demonstrated its utility as a strategic tool for procedure planning and prediction of procedure success.The purpose of our study was the development of a new score which summarizes relevant factors concerning CTO success.

**Methods:** 38 patients with 40 CTOs underwent contrast-enhanced coronary CT angiography before PCI by expert operators. By independent investigators, the occlusion length (in mm), the degree calcification at entry and exit of the CTO (scale of 0 to 4), the maximal degree of calcification of the vessel cross-section (scale 0 to 4), the percent calcified length of the CTO (scale o to 4), presence of visible contrast pools in the course of the occluded segment (scale 0 to 4), vessel tortuosity, minimal visible vessel diameter (mm) and the minimal visible non-calcified vessel diameter (mm) were investigated. All parameters were compared between patients in whom revascularization was successful and those in whom revascularization failed.

**Results:** The degree of calcification at entry of the CTO (score 0.8±1.0 vs. 1.5±1.3 for success vs. failure, p = 0.05), the maximal degree of calcification of the vessel cross-section (score 1.5±1.1 vs.2.5±1.4 for success vs. failure, p = 0.02), the minimal visible non-calcified vessel diameter (score 2.2±0.8 vs. 1.3±1.3 mm for success vs. failure, p = 0.007) were statistically different between both groups (see table). A score which combined these parameters was significantly lower for success than for failure (5.3 vs. 7.6 p = 0.03), with an area under the ROC curve of 0.7184.

**Conclusions:** Coronary CT angiography can help predict revascularization success of CTO patients. The degree of vessel calcification at the proximal cap as well as in the vessel course, and the minimal visible non-calcified vessel diameter seem to be the major predictors of success vs. failure.